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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/513,001	02/25/00	TZENG	J P-1004

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IM22/0613

EXAMINER

BOSS, W

ART UNIT	PAPER NUMBER
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1775

DATE MAILED:

06/13/01

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/513,001

Applicant(s)

TZENG, JING WEN

Examiner

Wendy Boss

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 and 5.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1-4, 7, 8, 11, 13-15 and 18-21 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,878,152 (Sauzade et al.).

Sauzade discloses a thermal management system comprising a heat source having an external surface and a thermal interface (see Figure 1). The thermal management system in the reference also comprises an anisotropic flexible graphite sheet having a planar area greater than the area of the external surface of the heat source (see column 3, lines 22-27). The thermal management system of the reference has a thermal interface in operative connection with the heat source, which comprises an electronic component (see column 1, lines 6-14). The anisotropic flexible sheet disclosed in the reference is formed by compressing exfoliated particles of natural graphite (see column 4, lines 1-10). Sauzade further discloses a thermal management system comprising a heat sink which comprises a graphite article shaped so as to provide a heat collection surface on at least one heat dissipation surface (see column 4, lines 30-41). The reference also discloses a heat sink comprising a graphite article shaped so as to provide a heat

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collection surface and at least one heat dissipation surface, the heat collection surface of the heat sink being in operative contact with the second of the planar surfaces of the thermal interface (see column 4, lines 30-41; and column 2, line 64). The graphite article disclosed by Sauzade also comprises anisotropic flexible sheets of compressed particles of graphite laminated into a unitary article (see column 4, lines 30-41).

3. Claim 4 is rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,208,513 (Fitch et al.).

Fitch discloses a thermal management system comprising a heat sink which comprises a graphite article shaped so as to provide a heat collection surface and at least one heat dissipation surface, wherein arranging the heat collection surface of the graphite article in operative connection with a heat source causes dissipation of heat from the heat source through the dissipation surface (see column 3, lines 19-23).

4. Claims 4 and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,027,807 (Inoue et al.).

Inoue discloses a thermal management system comprising a heat sink which comprises a graphite article shaped so as to provide a heat collection surface and at least one heat dissipation surface, wherein arranging the heat collection surface of the graphite article in operative connection with a heat source causes dissipation of heat from the heat source through the dissipation surface (see column 9 line 63 through column 10, line 5; and Figure 11). Inoue also discloses that the heat dissipation surface of the graphite article comprises fins formed at a surface of the graphite article opposite the heat collection surface.

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5. Claims 4 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,131,651 (Richey, III).

Richey discloses a thermal management system comprising a heat sink which comprises a graphite article shaped so as to provide a heat collection surface and at least one heat dissipation surface, wherein arranging the heat collection surface of the graphite article in operative connection with a heat source causes dissipation of heat from the heat source through the dissipation surface (see column 4, lines 16-34). Richey further discloses that the graphite article has holes therethrough (see column 4, lines 35-36).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 5, 6, 9, 10, 12, 16, 17 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,878,152 (Sauzade et al.) in view of U.S. Patent No. 6,131,651 (Richey, III).

Sauzade discloses a thermal management system as shown above in paragraph number 2. The reference does not disclose fins formed at a surface of the graphite article opposite the heat collection surface; however, it would have been obvious to one having ordinary skill in the art that providing fins would increase the surface area and improve heat dissipation.

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Sauzade also does not disclose structural features such as cavities therein or holes therethrough; however, it would have been obvious to one having ordinary skill in the art to provide holes through the laminated thermal management system disclosed by Sauzade. Motivation for such modification can be found at column 3, line 62 through column 4, line 2 of Richey, which teaches that holes help to minimize the tendency of delamination.

Sauzade does not specifically recite that there is an adhesive between the flexible sheets of graphite; however, it would have been obvious to one having ordinary skill in the art that adhesive would provide additional structural integrity to the thermal management system.

The Sauzade reference does not disclose the particle size of the carbonaceous particles; however, absent a showing of criticality, it is within the level of one having ordinary skill in the art to vary the particle size.

8. Claims 1-3, 7-15 and 17-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,027,807 (Inoue et al.) in view of U.S. Patent No. 4,878,152 (Sauzade et al.).

Inoue discloses a thermal management system as shown above in paragraph number 4. The reference does not disclose that the graphite sheet is anisotropic; however, attention is directed to columns 3 and 4 of Sauzade, which disclose that an anisotropic graphite sheet helps to provide low heat expansion characteristics to thermal management systems. Such a teaching would have motivated one having ordinary skill in the art to use anisotropic graphite sheets for the thermal management system of Inoue.

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9. Claims 1-3, 7-12, 15 and 17-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,131,651 (Richey, III) in view of U.S. Patent No. 4,878,152 (Sauzade et al.).

Richey discloses a thermal management system as shown above in paragraph number 5. The reference does not specifically disclose that the graphite sheet is anisotropic; however, attention is directed to columns 3 and 4 of Sauzade, which disclose that an anisotropic graphite sheet helps to provide low heat expansion characteristics to thermal management systems. Such a teaching would have motivated one having ordinary skill in the art to use anisotropic graphite sheets for the thermal management system of Richey.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wendy Boss whose telephone number is 703-306-5922. The examiner can normally be reached on M-Th 8:30a-6:00p; 2nd F 8:30a-5:00p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on 703-308-3822.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Wendy Boss
June 11, 2001



DEBORAH JONES
SUPERVISORY PATENT EXAMINER